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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,569	09/19/2005	Leonard Rexberg	4147-129	9619

23117 7590 09/01/2009

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EXAMINER	
GHULAMALI, QUTBUDDIN	
ART UNIT	PAPER NUMBER
2611	

MAIL DATE	DELIVERY MODE
09/01/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/549,569	REXBERG, LEONARD	
	Examiner	Art Unit	
	Qutbuddin Ghulamali	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,8-13,15 and 17-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *20* is/are allowed.

6)☒ Claim(s) *1-4,6,8-13,15,17,18 and 21-24* is/are rejected.

7)☒ Claim(s) *19, 25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/18/2009 has been entered.

2. Applicant's amendment to the specification at page 3, line 19 is acknowledged, the objection, therefore, withdrawn.

Response to Remarks/Amendment

3. Applicant's remarks/amendment, see page 9-12, filed 8/18/2009, with respect amendment of claims 1, 10, 20, 21, have been fully considered. However, upon further review and consideration, a new ground(s) of rejection is made in view of reference to Wright. The rejection follows.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 6, 8-13, 15, 17-18, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ding et al (US Pub. 2003/0223508), in view of Wright et al (US Pub. 2002/0044014).

6. Regarding claim 1, Ding discloses

Regarding claims 1, 10, 21, Ding discloses a power amplifier pre-distorter formed by a discrete-time filter structure (a memory FIR filter is disclosed) with filter taps, comprising:

an individual look-up table (a number of lookup tables) for each filter tap, each look-up table representing a sampled polynomial in a variable representing signal amplitude (signal gain) (page 1, section 0012, 0013; page 2, sections 0025, 0028, 0029);

means for selecting (tap values are selected with search algorithm), from each filter tap look-up table, a filter coefficient that depends on the amplitude of a corresponding complex signal value to be multiplied by the filter tap (page 3, section 0032, 0037; page 4, section 0044, 0047, 0048, 0049, 0051, 0052; page 5, sections 0055, 0056; page 6, section 0069, 0070, 0073); and

means for compensating for changes in at least one predetermined parameter, wherein the parameter represents amplifier temperature [Ding discloses in an embodiment that the predistortion circuit 300, fig. 3A utilizes a memoryless predistortion technique with an assumption that nonlinear power amplifier distortion is dependent on the instantaneous input power or signal amplitude can contribute to junction temperature, a parameter representative of amplifier temperature] (page 3, section 0041, lines 1-7).

What Ding does not disclose is compensating for changes in amplifier temperature not

dependent on memory effects of the amplifier. However, Wright discloses in an embodiment a circuit for compensating for changes in amplifier temperature not dependent on memory effects of the amplifier (page 1, section 0011; page 16, section 0298-0299; page 30, section 0478-0479). A person of ordinary skill in the art at the time the invention was made would have been motivated to use temperature parameter of power amplifier to account for changing temperature in the amplifier (temperature sensor 116, fig. 46, detecting the temperature) parameter as taught by Wright in the circuit of Ding because it can allow the effective prediction of changes in amplifier temperature sensed in real time and allow for efficient compensation and adjustment of signal with the use of predistortion.

Regarding claims 2, 3, 4, 11, 12, 13 Ding discloses the discrete-time filter structure comprises a FIR filter structure (page 4, sections 0048, 0049).

Regarding claims 6, 15, 22, Ding discloses all limitations of the claim above except does not explicitly disclose parameter represents average pre-distorter signal power. However, Wright in a similar field of endeavor discloses a scheme that incorporates average envelope power of parameter for pre-distorter (page 16, section 0298, 0299). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use parameter represent average power as taught by Wright in the circuit of Ding because it can permit the amplifier's nonlinearity to be properly characterized (note: as depicted in fig. 17, these variations may be predicted by introducing a third independent degree of freedom into the model 75 of the amplifier 64, addressed as a function of the integrated signal amplitude or past average power

generated by the amplifier, the averaged power level (die temperature) is computed by the integrator circuit 88 (or external temperature sensor output) and quantized to form an address (page 16, section 0298, 0299).

Regarding claims 8, 17, 23, Ding discloses all limitations of the claim above. Ding does not explicitly disclose parameter also represent power amplifier bias. However, Wright discloses parameter can represent power amplifier bias (page 16, section 0296). It would have been obvious to a person of ordinary skill in the art to have parameter represent power amplifier bias as shown by Wright in the circuit of Ding because bias represent power related to amplifier temperature.

Regarding claims 9, 18, 24, Ding discloses means for selecting, from each filter tap look-up table, a filter coefficient that depends on the instantaneous signal power of a corresponding complex signal value to be multiplied by the filter tap (page 3, section 0041).

Allowable Subject Matter

7. Claim 20 allowed.

8. Claims 19, 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutbuddin Ghulamali whose telephone number is (571)-

272-3014. The examiner can normally be reached on Monday-Friday, 7:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QG.
August 28, 2009.

/Chieh M Fan/
Supervisory Patent Examiner, Art Unit 2611